AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): A photosemiconductor device comprising:

a light oscillation part formed in a first region of a first conduction-type semiconductor substrate and including a first active layer which generates light by current injection, a tuning layer with a second conduction-type intermediate layer formed between the first active layer and the tuning layer, for varying an oscillation wavelength by current injection, and a diffraction grating formed near the first active layer and the tuning layer; and

a light amplification part formed in a second region of the semiconductor substrate and including a second active layer which amplifies light by current injection, for amplifying light generated by the light oscillation part,

the light amplification part being processed in a mesa stripe, and

the device further comprising one electrode for leading out current from the light amplification part, said one electrode being positioned at the side surface of the mesa stripe.

Claim 2 (original): The photosemiconductor device according to claim 1, wherein

a clad layer of the second conduction-type is formed between the semiconductor substrate

and the second active layer.

Claim 3 (original): The photosemiconductor device according to claim 2, wherein two semiconductor layers of conduction types different from each other are formed between the semiconductor substrate and the clad layer.

Claim 4 (original): The photosemiconductor device according to claim 2, wherein a semi-insulating semiconductor layer is formed between the semiconductor substrate and the clad layer.

Claim 5 (currently amended): [[A]] The photosemiconductor device according to claim 2, ~~wherein~~ further comprising:

~~a first~~ another electrode for injecting current into the light amplification part ~~and a second electrode for leading out the current are formed on the side of a first surface of the semiconductor substrate,~~

said one electrode and said another electrode being formed on the side of a first surface of the semiconductor substrate.

Claim 6 (currently amended): The photosemiconductor device according to claim 5, wherein

~~the light amplification part is processed in a mesa stripe, and~~

~~the second~~ said one electrode is formed on [[the]] a semiconductor layer of the second conduction-type connected to the clad layer at the side surface of the mesa stripe.

Claim 7 (original): The photosemiconductor device according to claim 1, wherein a clad layer of the second conduction-type is formed on the second active layer.

Claim 8 (original): The photosemiconductor device according to claim 7, wherein the intermediate layer is formed, extended in the second region of the semiconductor substrate.

Claim 9 (currently amended): The photosemiconductor device according to claim 7, ~~wherein~~ further comprising:

~~a first~~ another electrode for injecting current into the light amplification part, said another electrode [[is]] being formed on the side of a second surface of the semiconductor substrate, [[and]]

~~a second~~ said one electrode ~~for leading out the current from the light amplification part is~~ being formed on the side of a first surface of the semiconductor substrate.

Claim 10 (currently amended): The photosemiconductor device according to claim 9, wherein

~~the light amplification part is processed in a mesa stripe, and~~

~~the second~~ said one electrode is formed on a semiconductor layer of the second conduction-type connected to the clad layer at the side surface of the mesa stripe.

Claim 11 (original): The photosemiconductor device according to claim 1, further comprising

an optical waveguide part which is formed between the light oscillation part and the light amplification part and does not contribute to the light oscillation and the light amplification.

Claim 12 (original): The photosemiconductor device according to claim 1, wherein

the first active layer and the second active layer are formed of a semiconductor layer of the same structure.

Claim 13 (original): The photosemiconductor device according to claim 1, wherein

the light oscillation part has a mesa stripe configuration of a first width,

the light amplification part has a mesa stripe configuration of a second width, and

the first width is continuously changed to the second width between the light oscillation part and the light amplification.

Claim 14 (original): The photosemiconductor device according to claim 1, further comprising

an anti-reflection film formed on the end surface of the light amplification part.

Claim 15 (original): The photosemiconducdtor device according to claim 1, wherein

the light oscillation part comprises a plurality of light oscillation elements having central oscillation wavelengths different from each other,

the device further comprising:

a plurality of optical waveguides formed between the light oscillation part and the light amplification part, for guiding light output from the plurality of the light oscillation elements; and

an optical coupler part for connecting the plurality of the optical waveguides and the light amplification part.

Claim 16 (original): A photosemiconductor device comprising:

a light oscillation part formed in a first region of a first conduction-type semiconductor substrate and including an active layer, for generating light by current injection, and a wavelength control layer with a second-conduction type intermediate layer formed between the active layer and the wavelength control layer, for varying an oscillation wavelength of the active layer by current injection; and

an optical waveguide part including an insulation layer formed in a second region of the semiconductor substrate and an optical waveguide layer formed above the insulation film, for guiding light output from the light oscillation part.

Claim 17 (original): The photosemiconductor device according to claim 16, wherein the insulation film includes two semiconductor layers of conduction types different from each other.

Claim 18 (original): The photosemiconductor device according to claim 16, wherein the insulation layer comprises a semi-insulating semiconductor layer.

Claim 19 (original): The photosemiconductor device according to claim 16, further comprising

a buried layer formed on the semiconductor substrate, for covering the side of a first mesa stripe of the active layer, the intermediate layer and the wavelength control layer which are patterned and for covering the side of a second mesa stripe of the insulation layer and the optical waveguide layer which are patterned.

Claim 20 (original): The photosemiconductor device according to claim 19, wherein the buried layer includes a first buried layer of the second conduction type electrically

connected to the intermediate layer and a second buried layer formed between the semiconductor substrate and the first buried layer, for insulating the first buried layer from the semiconductor substrate.

Claim 21 (original): The photosemiconductor device according to claim 20, wherein the second buried layer includes two semiconductor layers of conduction types different from each other.

Claim 22 (original): The photosemiconductor device according to claim 19, wherein the first mesa stripe and the second mesa stripe are connected continuously to each other.

Claim 23 (original): The photosemiconductor device according to claim 16, further comprising

a light amplification part formed in a third region of the semiconductor substrate, for amplifying light which has been generated in the light oscillation part and has propagated through the optical waveguide part.

Claim 24 (original): The photosemiconductor device according to claim 23, wherein the light oscillation part includes a plurality of light oscillation elements having central oscillation wavelengths different from one another, and

the optical waveguide part includes a plurality of optical waveguides for guiding light output from the plurality of the light oscillation elements and an optical coupler part for connecting the plurality of the optical waveguides and the light amplification part.

Claim 25 (original): The photosemiconductor device according to claim 16, wherein the first conduction type is p type, and the second conduction type is n type.

Claim 26 (withdrawn): A method for fabricating a photosemiconductor device comprising the steps of:

forming in a first region of a first conduction-type semiconductor substrate an active layer for generating light by current injection, and a wavelength control layer with a second conduction-type intermediate layer formed between the active layer and the wavelength control layer, for changing an oscillation wavelength of the active layer by current injection;

forming an insulation layer in a second region of the semiconductor substrate;

forming an optical waveguide layer on the insulation layer;

patterning the active layer, the intermediate layer and the wavelength control layer to form a first mesa stripe in the first region, and patterning the insulation film and the optical waveguide layer to form a second mesa stripe in the second region; and

forming a buried layer electrically connected to the intermediate layer, for covering the side surface of the first mesa stripe and the side surface of the second mesa stripe.

Claim 27 (withdrawn): The method for fabricating a photosemiconductor device according to claim 26, wherein

in the step of forming the insulation layer, the insulation layer includes two semiconductor layers of conduction types different from each other.

Claim 28 (withdrawn): The method for fabricating a photosemiconductor device according to claim 26, wherein

in the step of forming the insulation film, the insulation of a semi-insulating semiconductor layer is formed.

Claim 29 (withdrawn): The method for fabricating a photosemiconductor device according to claim 26, wherein

the step of forming the buried layer includes the step of forming another buried layer between the semiconductor substrate and the buried layer for insulating the buried layer from the semiconductor substrate.

Claim 30 (withdrawn): The method for fabricating a photosemiconductor device according to claim 29, wherein

in the step of forming said another buried layer, said another buried layer includes two semiconductor layers of conduction types different from each other.

Claim 31 (original): A photosemicondutor device comprising:

a light oscillation part formed on a first conduction-type semiconductor substrate and including a plurality of light oscillation elements which include an active layer for generating light by current injection, a tuning layer with a second conduction-type intermediate layer formed between the active layer and the tuning layer, for varying an oscillation wavelength by current injection, and a diffraction grating formed near the active layer and the tuning layer; and

a current leading-out part for selectively leading out current injected into the active layer or the tuning layer from the intermediate layer of an arbitrary one of the light oscillation elements.

Claim 32 (original): The photosemiconductor device according to claim 31, wherein

the current leading-out part includes a plurality of switches for changing over the respective connections of the intermediate layer of the plurality of the light oscillation elements to a reference potential.

Claim 33 (original): The photosemiconductor device according to claim 31, further comprising

a first current injecting part for injecting current into the active layer or the tuning layer of the plurality of the light oscillation elements via an electrode formed on the side of a first surface of the semiconductor substrate.

Claim 34 (original): The photosemiconductor device according to claim 33, wherein the first current injecting part includes an electric power source, and a plurality of wires connecting the active layer or the tuning layer of the plurality of the light oscillation elements in parallel to the electric power source.

Claim 35 (original): The photosemiconductor device according to claim 34, wherein the first current injecting part further includes a plurality of switches respectively provided in the plurality of the wires.

Claim 36 (original): The photosemiconductor device according to claim 32, further comprising

a first current injecting part comprising an electric power source, a plurality of wires connecting the active layer or the tuning layer of the plurality of the light oscillation elements in parallel to the electric power source, and a plurality of switches provided in the respective plurality of the wires and interlocked operatively with the plurality of the switches of the current leading-out part, for injecting current into the active layer or the tuning layer of an arbitrary one of the light oscillation elements via an electrode formed on the side of a first surface of the semiconductor substrate.

Claim 37 (original): The photosemiconductor device according to claim 31, further comprising

a second current injecting part for injecting current into the tuning layer or the active layer of the plurality of the light oscillation elements via an electrode formed on the side of a second surface of the semiconductor substrate.

Claim 38 (original): The photosemiconductdor device according to claim 31, further comprising

a light amplification part formed on the semiconductor substrate and including an active layer for amplifying light by current injection, for amplifying light generated by the light oscillation part.

Claim 39 (original): The photosemiconductor device according to claim 38, between the light oscillation part and the light amplification part, further comprising:

a plurality of optical waveguides for guiding light output from the plurality of the light oscillation elements; and

an optical coupler for optically connecting the plurality of the optical wavguides and the light amplification part.

Claim 40 (original): The photosemiconductor device according to claim 31, wherein the plurality of the light oscillation elements have central oscillation wavelengths different from one another.

Claim 41 (withdrawn): A method for driving a photosemiconductor device comprising a plurality of light oscillation elements formed on a first conduction-type semiconductor substrate and including an active layer for generating light by current injection, a tuning layer with a second conduction-type intermediate layer formed between the active layer and the tuning layer, for varying oscillation wavelengths by current injection, and a diffraction grating formed near the active layer and the tuning layer,

the method comprising the step of injecting current into the active layer or the tuning layer of the plurality of the light oscillation elements with the intermediate layer of one selected out of the light oscillation elements connected to a reference potential and with the intermediate layer of the other light oscillation elements floated.

Claim 42 (withdrawn): A method for driving a photosemiconductor device comprising: a light oscillation part formed on a first conduction-type semiconductor substrate and including a plurality of light oscillation elements including an active layer for generating light by current injection, a tuning layer with a second conduction-type intermediate layer formed between the active layer and the tuning layer, for varying oscillation wavelengths by current injection, a

diffraction grating formed near the active layer and the tuning layer; a first current injecting part for injecting current into the active layer or the tuning layer of the plurality of the light oscillation elements via an electrode formed on the side of a first surface of the semiconductor substrate; a second current injecting part for injecting current into the tuning layer or the active layer of the plurality of the light oscillation elements via an electrode formed on the side of a second surface of the semiconductor substrate; a current leading-out part including a plurality of wires connecting the intermediate layer of the respective plurality of the light oscillation elements to a reference potential and a plurality of switches provided in the respective plurality of the wires,

the method comprising the step of injecting current by the first current injecting part and the second current injecting part with one of the plurality of the switches being closed and with the other switches opened.

Claim 43 (withdrawn): A method for driving a photosemiconductor device comprising: a light oscillation part formed on a first conduction-type semiconductor substrate and including a plurality of light oscillation elements including an active layer for generating light by current injection, a tuning layer with a second conduction-type intermediate layer formed between the active layer and the tuning layer, for varying an oscillation wavelength by current injection, and a diffraction grating formed near the active layer and the tuning layer; a first current injecting part including a first electric power source, a plurality of first wires connecting the active layer or the tuning layer of the plurality of the light oscillation elements in parallel to the first electric power

source and a plurality of first switches respectively provided in the plurality of the first wires, for injecting current into the active layer or the tuning layer of an arbitrary one of the light oscillation elements via an electrode formed on the side of a first upper surface of the semiconductor substrate; a second current injecting part including a second electric power source, for injecting current into the tuning layer or the active layer of the plurality of light oscillation elements via an electrode formed on the side of a second surface of the semiconductor substrate; and a current leading-out part including a plurality of second wires connecting the intermediate layer of the respective plurality of the light oscillation elements to a reference potential and a plurality of second switches provided respectively in the plurality of the second wires,

the method comprising the step of driving the first electric power source and the second electric power source to drive one of the plurality of light oscillation elements with the first switch and the second switch provided in the first wire and the second wire connected to one of the plurality of the light oscillation elements closed and with the other first switches and the second switches provided in the first wires and the second wires connected to the other light oscillation elements opened.

Claim 44 (withdrawn): The method for driving a photosemiconductor device according to claim 43, wherein

the drive of the first electric power source and the second electric power source is started after the first switch and the second switch have been closed to thereby drive one of the plurality

of light oscillation elements.

Claim 45 (withdrawn): The method for driving a photosemiconductor device according to claim 43, wherein

when the drive of one of the plurality of the light oscillation elements is stopped, the first switch and the second witch which have been closed are opened after the drive of the first electric power source and the second electric power source have been stopped.

Claim 46 (withdrawn): The method for driving a photosemiconductor device according to claim 43, wherein when the drive of one of the plurality of light oscillation elements is stopped, and the drive of another one of the plurality of light oscillation elements is started,

the first switch and the second switch which have been closed are opened after the drive of the first electric power source and the second electric power source are stopped,

the first switch and the second switch provided in the first wire and the second wire connected to another one of the plurality of the light oscillation elements are closed,

the first switches and the second switches of the first wires and the second wires connected to the other light oscillation elements are opened, and then

the drive of the first electric power source and the second electric power source are resumed to thereby drive said another one of the plurality of the light oscillation elements.

Claim 47 (withdrawn): The method for driving a photosemiconductor device according to claim 43, wherein

the switching operations of the first switch and the second switch provided in the first wire and the second wire connected to one and the same one of the plurality of the light oscillation elements are made substantially at the same time.

Claim 48 (withdrawn): The method for driving a photosemiconductor device according to claim 42, wherein

the photosemiconductor device further comprises a light amplification part for amplifying light by current injection, which amplifies light generated by the light oscillation part, and

the light generated by the light oscillation part is guided to the light amplification part to be amplified by the light amplification part.